

**WHAT IS CLAIMED IS:**

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Fig. 1

An apparatus for multiplexing a line, comprising:  
a plurality of conversion processors, wherein each conversion processor is configured to modulate one of a call processing request signal and transmission data provided by a user application to create an interim modulated signal, and to demodulate the interim modulated signal to create a secondary original signal, and wherein each conversion processor is also configured to demodulate an externally provided signal and to provide the demodulated signal to a corresponding user application;

a main controller configured to process call processing request signals provided from at least one of the conversion processors to generate call control data that is added to transmission data in at least one header field, and wherein the main controller is configured to separate a header data included in an externally provided signal; and

a multiplexing/demultiplexing processor configured to logically multiplex signals output from the main controller, and to demultiplex an externally provided signal.

2. The apparatus of claim 1, wherein each conversion processor comprises:

a pulse code modulation (PCM) modulator configured to modulate a signal provided by a user application by a PCM mode;

a digital signal processor configured to determine a type of a modulated signal provided  
5 from the PCM modulator and to output the modulated signal to a path corresponding to the  
determined type; and

a demodulating/modulating portion configured to demodulate the modulated signal  
provided from the digital signal processor.

3. The apparatus of claim 2, wherein each conversion processor also includes a first  
line connector, configured to communicate with a user application, that is coupled to the PCM  
modulator.

4. The apparatus of claim 2, wherein the demodulating/modulating portion  
comprises:

a first demodulator/modulator configured to demodulate a first type of communication  
signal output from the digital signal processor to create a first type of secondary original signal,  
and to modulate a first type of communication signal provided from the main controller;

a second demodulator/modulator configured to demodulate a second type of  
communication signal output from the digital signal processor to create a secondary original  
signal, and to modulate the second type of communication signal provided from the main  
controller; and

a third demodulator/modulator configured to demodulate a third type of communication signal output from the digital signal processor to create a third type of secondary original signal, and to modulate the third type of communication signal provided from the main controller.

5. The apparatus of claim 1, wherein each conversion processor also includes a first connection controller configured to generate a serial signal, based on the secondary original signal, and to output the serial signal to the main controller.

6. The apparatus of claim 1, wherein the multiplexing/demultiplexing processor comprises a modem processor for converting a call processing request signal and transmission data provided from the main controller to analog signals.

7. The apparatus of claim 6, further comprising a second line connector configured to process communications with an external apparatus, wherein the second line connector is coupled to the modem processor.

8. The apparatus of claim 6, further comprising a second connection controller for controlling signals provided from the main controller to the modem processor.

9. The apparatus of claim 1, wherein the call control data comprises at least one of a message type, a port discriminator, a user information, and a characteristic information.

10. The apparatus of claim 9, wherein the message type is one of setting, release and maintenance of a call.

11. The apparatus of claim 9, wherein the port discriminator is indicative of a discriminator of one of the conversion processors.

12. The apparatus of claim 11, wherein the characteristic information includes at least one of a signal type, a data coding mode of the user application, a modem mode and information for a communication line speed.

13. A data transmission method comprising the steps of:  
modulating one of a call processing request signal and transmission data provided from a user application with a conversion processor by a pulse code modulation (PCM) mode to create an interim modulated signal;

demodulating the interim modulated signal to create a secondary original signal;

processing a call processing request signal from the conversion processor with a main controller that is coupled to the conversion processor to generate call control data that is added to transmission data in at least one header field; and

logically multiplexing signals output from the main controller with a multiplexing processor, wherein the multiplexing processor is coupled to the main controller.

14. The method of claim 13, wherein the demodulating step comprises the steps of:  
determining a type of communication signal that was modulated to create the interim  
modulated signal, wherein a first type of communication signal is a voice signal, a second type  
of signal is a facsimile signal, and a third type of communication signal is a data signal; and  
5 demodulating the interim modulated signal with a demodulator having a path set to  
correspond with the determined type of communication signal.

15. The method of claim 13, further comprising a step of controlling the conversion  
processor with the multiplexing processor to match their respective signal transmission modes.

16. The method of claim 13, wherein the call control data includes at least one of a  
message type, a port discriminator, user information, and a user characteristic information.

17. The method of claim 16, wherein the message type is one of a setting, a release  
and a maintenance of a call.

18. The method of claim 16, wherein the port discriminator is indicative of a  
conversion processor coupled to a corresponding user application.

19. The method of claim 16, wherein the user characteristic information includes at least one of a signal type, a data coding mode of the user application, a modem mode and information for a communication line speed.

20. A data transmission method comprising the steps of:

demultiplexing an externally provided multiplexed input signal with a demultiplexing processor;

processing a call processing request signal transmitted from the demultiplexing processor with a main controller coupled to the demultiplexing processor and separating header data included in the call processing request signal provided from the demultiplexing processor; and

demodulating signals provided from the main controller with one of a plurality of conversion processors to transmit the signal to a corresponding user application, wherein each of the plurality of conversion processors is coupled to the main controller and a corresponding user application.